

### REMARKS

This is a full and timely response to the final Office action mailed March 7, 2007. Reexamination and reconsideration in view of the foregoing amendments and following remarks is respectfully solicited.

Claims 1-43 are pending in this application, with Claims 1, 18, 36, and 40 being the independent claims. Claims 1-35 were previously withdrawn. Claims 36 and 40 were previously amended. No new matter is believed to have been added.

#### Rejections Under 35 U.S.C. § 103

The Office Action states that claim 36 is rejected under 35 U.S.C. § 103 as allegedly being anticipated over U.S. Pat. Appn. No. 2003/0171239 to Patel et al. ("Patel"), in view of U.S. Pat. No. 6,083,838 to Burton ("Burton"), evidenced by [www.cop.ufl.edu/safezone/prokai/pha5100/Eagents.htm](http://www.cop.ufl.edu/safezone/prokai/pha5100/Eagents.htm) ("UFL reference") and [www.princeton.edu/~cebic/chelbindadvanced.html](http://www.princeton.edu/~cebic/chelbindadvanced.html). ("Princeton reference").

Independent claim 36 recites the steps of, *inter alia*, polishing a wafer with a slurry having a pH and an ionic strength, after the wafer has been polished, applying a post-CMP wetting composition to the wafer, wherein the post-CMP wetting composition comprises a non-ionic surfactant comprising block copolymers of ethylene oxide and propylene oxide, the non-ionic surfactant having an HLB value in the range from 1 to 15, in an amount of between about .005-10% weight of the composition.

Patel relates to methods and compositions for treating a surface of a substrate by foam technology that includes at least one treatment chemical. See Abstract. Burton teaches a slurry composition that for use in a chemical metal polishing process. However, nowhere is there any disclosure of the step of after the wafer has been polished, applying a post-CMP wetting composition to the wafer, wherein the post-CMP wetting composition comprises a non-ionic surfactant comprising block copolymers of ethylene oxide and propylene oxide.

In addition to failing to disclose a post-CMP wetting composition that comprises a non-ionic surfactant including block copolymers of ethylene oxide and propylene oxide that is applied after the wafer has been polished, the Applicants submit that Burton is

non-analogous art. Before a citation can be used as a basis for a rejection, the examiner must first determine it to be analogous art. In re Oetiker, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). To be analogous art, the citation “must either be in the field of applicant’s endeavor or, if not, then be reasonably pertinent to the problem with which the invention was concerned.” Id. In this instance, Burton is clearly not in the same field of endeavor as the applicant’s. Whereas Burton discusses a slurry for use while a substrate is being polished, the Applicants’ field of endeavor is a wetting composition that is used during after the wafer is polished, particularly, when the wafer is to be cleaned.

Moreover, Burton is not pertinent to the problem with which the instant invention was concerned. Specifically, the instant invention was conceived to solve the problem of keeping a wafer surface wetted to maintain resulting particles that may have adhered to the wafer after exposure to the CMP slurry in clumps, while Burton solves the problem of controlling and minimizing oxidation and resulting oxide erosion that occurs in CMP

Thus, as Patel and Burton fail to disclose, either explicitly or inherently, at least the above-noted element of claim 36, and Burton is non-analogous art, reconsideration and withdrawal of the §103 rejection is therefore solicited.

Claims 37 and 39 are rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Patel and Burton, in view of “Comparing the effectiveness of knobby and ridged post-CMP cleaning brushes”, Micron Technology, July 1999, Micromagazine by Cooper et al. (“Cooper”). This rejection is respectfully traversed.

Claims 37 and 39 depend from claim 36 and therefore rely on the arguments presented above with regard to Patel and Burton. Moreover, Cooper does not make up for the deficiencies of Patel and Burton. Although Cooper teaches using different brush designs in a CMP process, nowhere is there disclosure of a non-ionic surfactant including block copolymers of ethylene oxide and propylene oxide, the non-ionic surfactant having an HLB value in the range from 1 to 15, in an amount of between about .005-10% weight of the composition, as recited in claim 36. Accordingly, as Patel, Burton, and Cooper fail to disclose, either explicitly or inherently, at least the above-noted element of claim 36, hence, claims 37 and 39, reconsideration and withdrawal of the §103 rejection is

therefore solicited.

Claim 38 is rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Patel, Burton, and Cooper in further in view of U.S. Pat. No. 5,329,732 to Karlsru et al. ("Karlsru"). This rejection is respectfully traversed.

Claim 38 depends from claims 36 and 37 and therefore relies on the arguments presented above as they relate to Patel, Burton, and Cooper. Moreover, Karlsru does not make up for the deficiencies of Patel, Burton, and Cooper. Specifically, Karlsru teaches a wafer polishing apparatus that includes a wafer polishing assembly having a plurality of wafer carriers for substantially simultaneously polishing a plurality of wafers against a rotating polishing surface. See Abstract. However, there is no mention or suggestion whatsoever of using a non-ionic surfactant including block copolymers of ethylene oxide and propylene oxide, the non-ionic surfactant having an HLB value in the range from 1 to 15, in an amount of between about .005-10% weight of the composition, as recited in claim 36. Accordingly, as Patel, Burton, Cooper, and Karlsru fail to disclose, either explicitly or inherently, at least the above-noted element of claim 36, and hence, claim 38, reconsideration and withdrawal of the §103 rejection is therefore solicited.

Claim 40 is rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Patel, in view of Burton, U.S. Patent No. 7,087,564 to Misra ("Misra") and Kern, Editor of handbook of Semiconductor Wafer Cleaning Technology – Science, Technology, and Applications ("Kern"). This rejection is respectfully traversed.

Claim 40 relates to a method of processing a wafer that includes, *inter alia*, polishing the wafer with a slurry having a pH and an ionic strength, after the wafer has been polished, applying a CMP wetting composition to the wafer, wherein the CMP wetting composition comprises a non-ionic surfactant comprising block copolymers of ethylene oxide and propylene oxide.

As mentioned above, neither Patel nor Burton discloses the step of **after the wafer has been polished, applying a post-CMP wetting composition to the wafer, wherein the post-CMP wetting composition comprises a non-ionic surfactant comprising block copolymers of ethylene oxide and propylene oxide.** Additionally, Burton is non-

analogous art. Moreover, neither Misra nor Kern make up for the deficiencies of Patel and Burton. Misra discloses matching the pH of the cleaning solution used after CMP to that of the last slurry used on the wafer surface. See Abstract. Kern discusses the effect of ionic strength on electric double layer repulsion. However, neither Misra nor Kern discusses a composition that includes block copolymers of ethylene oxide and propylene oxide. Thus, as Patel, Burton, Misra, and Kern fail to disclose, either explicitly or inherently, at least the above-noted element of claim 40, reconsideration and withdrawal of the §103 rejection is therefore solicited.

Claims 41 and 43 are also rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Patel in view of Misra, Kern, and Cooper. Claims 41 and 43 depend from claim 40 and therefore rely on the arguments presented above with regard to Patel, Misra, and Kern. Moreover, Cooper does not make up for the deficiencies of Patel, Misra, and Kern. Although Cooper teaches using different brush designs in CMP, nowhere is there disclosure of applying a composition that includes block copolymers of ethylene oxide and propylene oxide, as recited in claim 40. Accordingly, as Patel, Misra, Kern, and Cooper fail to disclose, either explicitly or inherently, at least the above-noted element of claim 40, and hence, claims 41 and 43, reconsideration and withdrawal of the §103 rejection is therefore solicited.

Claim 42 is rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Patel in view of Misra, Kern, and Cooper further in view of U.S. Pat. No. 5,329,732 to Karlsrud et al. ("Karlsrud"). This rejection is respectfully traversed.

Claim 42 depends from claims 40 and 41 and therefore relies on the arguments presented above as they relate to Patel, Misra, Kern, and Cooper. Moreover, Karlsrud does not make up for the deficiencies of Patel, Misra, Kern, and Cooper. Specifically, Karlsrud teaches a wafer polishing apparatus that includes a wafer polishing assembly having a plurality of wafer carriers for substantially simultaneously polishing a plurality of wafers against a rotating polishing surface. See Abstract. However, there is no mention or suggestion whatsoever of applying a CMP wetting composition that has a composition that includes block copolymers of ethylene oxide and propylene oxide, as

recited in claim 40. Accordingly, as Patel, Misra, Kern, Cooper, and Karlsrud fail to disclose, either explicitly or inherently, at least the above-noted element of claim 40, and hence, claim 42, reconsideration and withdrawal of the §103 rejection is therefore solicited.

#### Conclusion

Based on the above, independent Claims 36 and 40 are patentable over the citations of record. The dependent claims are also deemed patentable for the reasons given above with respect to the independent claims and because each recite features which are patentable in its own right. Individual consideration of the dependent claims is respectfully solicited.

None of the other art of record discloses or suggests the inventive concept of the present invention as defined by the claims.

Hence, the Applicant submits that the present application is in condition for allowance. Favorable reconsideration and withdrawal of the objections and rejections set forth in the above-noted Office Action, and an early Notice of Allowance are requested.

Should the Examiner have any questions or wish to further discuss this application the Examiner is requested to telephone the undersigned attorney at the below-listed number.

If for some reason the Applicants have not paid a sufficient fee for this response, please consider this as authorization to charge Ingrassia, Fisher & Lorenz, Deposit Account No. 50-2091 for any fee which may be due.

Respectfully submitted,

Dated: 04/23/07

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